Monks Brook Improvements – Installation of Pool and Run Habitats M27 Junction 5 Southampton, Hampshire

Highways England, EM Highways, Interserve, Wild Trout Trust (WTT)

BIG Challenge 2015 submission category: Large scale permanent

Project overview

M27 Junction 5 is a strategic junction on the motorway network, providing key access to Southampton International Airport and Southampton Parkway railway station to the north, and into Southampton to the south.

The project involved widening the access roads to the existing roundabout from the M27 and 3 busy local roads. This infrastructure project valued at approximately £7 million aims to deliver improvements to the strategic road network, relieve congestion and improve safety.

Part of the scheme required the Eastleigh Link Culvert, through which Monks Brook runs, to be lengthened by 11m.

These works provided the opportunity to undertake habitat improvement that would benefit the local river ecology and in particular brown and migratory sea trout populations.

What were the biodiversity conditions on site, prior to the enhancement?

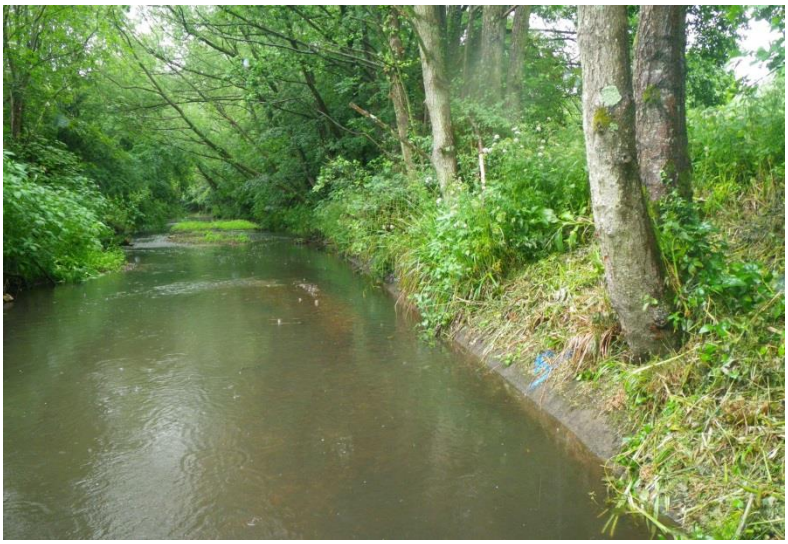

Photo: Before

The river throughout this reach has had significant channel modification and consisted almost entirely of very shallow glide running over mainly thin layer of deposited gravel overlying a concrete bed.

These hard, bare sections of bank and bed are sterile environments, providing no useful habitat for plants, invertebrates or fish.

Were there any specific conditions that led to you carrying out this work?

It was identified that work in this culvert could affect the trout population.

A flood defence consent was in place which identified necessary mitigation to protect them during the temporary works.

However, it was obvious to the team that there would still be some residual impact on the trout from the construction works and that something better could be achieved.

At a meeting attended by Highways England, EM Highways and Interserve, the decision was taken to go beyond the basic mitigation required by the consent and enhance the water course for salmonids for the future to leave a beneficial legacy.

What were the biodiversity measures taken?

There was virtually no suitable habitat for adult fish within 500m of the culvert before the project. Now, the works have transformed a long section of very uniform river bed into an ecologically valuable habitat.

A diverse and vibrant section of semi natural river has been created. The deep gravel tail sections of the new pool and run sections installed provide ideal environments for large trout to spawn in the winter months.

These sites also provide safe residence for coarse fish as well as brook lamprey, which are known to be present in some sections of the Monks Brook System.

Whilst brown and sea trout are economically important fish, particularly popular with anglers, they are also on the list of UK BAP priority fish species. Brook lamprey are an Annex 11 species listed under the European Habitats Directive.

Materials for construction included re-use of the broken concrete, existing silt deposits and timber for bank clearance in the construction, with the only imported material being 20-40mm aggregate as the existing material was not deemed suitable. This enhancement scheme could easily be replicated on a suitable site.

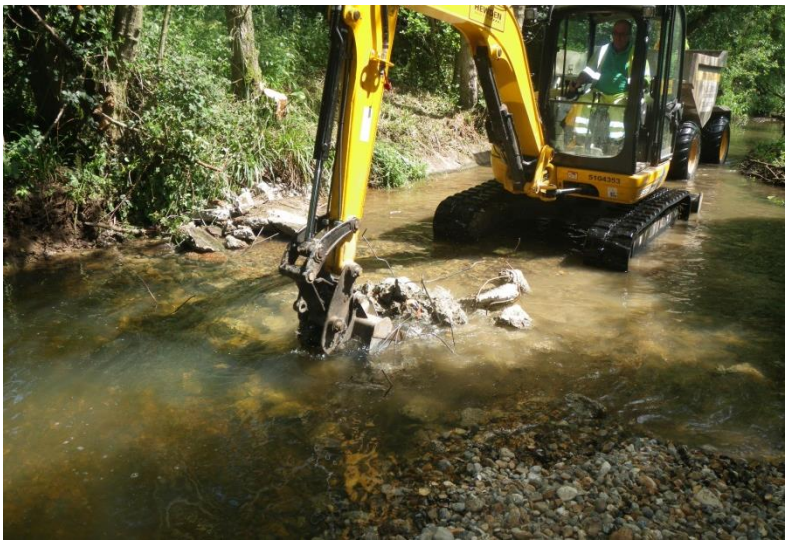

Photo: Breaking out concrete

Photo: Completed top pool

There is no requirement for long term management. The shape of the features is entirely sustainable and has been designed to meet the requirements of the fish while also ensuring that the turbulence of the water keeps the bottom clear of sand, silt and debris.

The project has been included within Innovations Register for Highways England as Interserve hadn't undertaken a project like this before. The workforce

were involved in the plans and briefed back to management to improve streamlining of the techniques used in the future.

This was a new activity for the workforce and site team and has led everyone involved to a greater understanding of the ecology of rivers and streams.

How would you best describe the project?

An enhancement.

Further information

These works are based on the principle of removing the concrete bed and bank armouring to allow the river to be free to develop natural morphological features.

Following advice from WTT who identified the suitable locations, the concrete bed and bank armouring were broke out. The underlying bed material was then redistributed with a tracked excavator and the broken concrete was recycled on site by crushing and re-using to create low marginal berms which were top dressed with gravels side cast from pool excavation.

Some additional 20-40mm gravel, of a suitable specification, was also imported to shape the tail of the pools to provide ideal spawning environments.

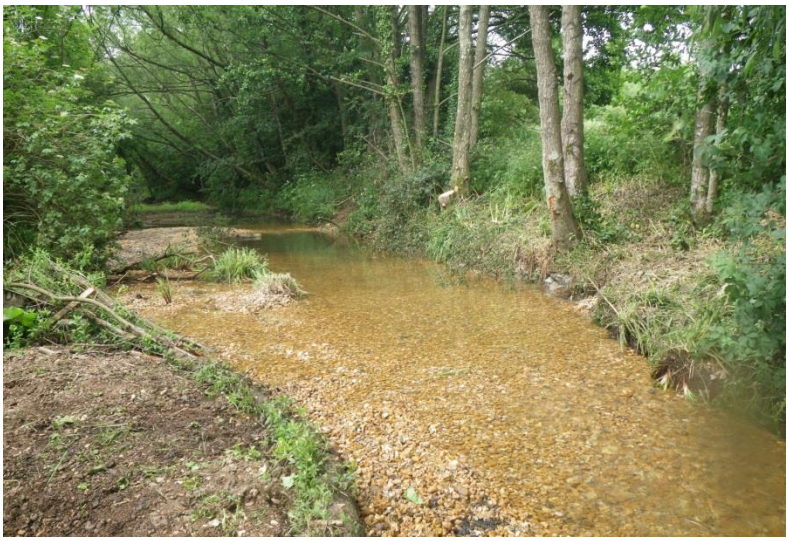

Photo: Tail of the run

The work to break into the bed of Monks Brook has been undertaken in such a way as to avoid damaging existing habitats. Sites were selected on the basis of avoiding any areas where some natural recovery had partially developed and concentrated on creating a series of high quality habitats that will be stable and provide improved ecological opportunities for a wide range of species.

It is too early to know if this has been successful. This collaborative work culminated in the construction of three distinct “pool and run” habitats that provide fish with both a safe refuge area to hold station and also provide optimal spawning opportunities.

Lessons:

- Early engagement with specialist organisations is vital.
- Inclusion in Flood Defence consent would have simplified the processes.
- Improved understanding of the options for protection and enhancement of local river ecology.

What was your personal motivation for carrying out the enhancement?

Intereserve are aware their work can easily damage river ecology. This demonstrates that the environment can be enhanced rather than simply protecting it. Interserve were delighted to be the catalyst for future transformation in the Monks Brook, as well as benefitting the local community.